

The American MERCURY

November 1927

THE BIOLOGY OF SUPERIORITY

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PLATO was greatly concerned about the "inborn qualities of the race." In his plans for an ideal state the body of ideas that we now call eugenics had an important place, and in a practical as well as an academic sense. "Breeding better men" was a matter, he said, upon which the state should ever keep a watchful eye, and encourage in all possible ways. Only so could there be assured an adequate supply of superior persons, capable of properly managing the affairs of the commonwealth.

But projects for the really basic uplift certainly did not begin with Plato. They must have entered the minds of much earlier philosophers. Is it likely that the users of that paleolithic palace, Font de Gaume, cavernous it is true, but the finest of all in the prehistoric metropolis now called Les Eyzies, had no notion of a truly genetic aristocracy? Of course they did. So intelligent and cultivated a lot of people as they were must have been just as keen as any bargain-counter baron to pass on to their descendants the material and spiritual advantages associated with a superior position in the tribe. And can there be any doubt that the Old Stone Age mayors, district attorneys, and Senators were quite as sure as our best Nordic citizens that it was good for the tribe to have its affairs managed by the superior individuals in it?

Such aristocratic ideas must have prevailed from the remotest antiquity. But they achieved scientific rationalization only just recently. Few more original or generally superior persons have ever lived than Francis Galton, who was the first one to undertake seriously the collection and analysis of observational data for the purpose of finding out the laws of heredity in human kind. From its very beginning Galton's interest in the problem of human inheritance was animated by the eugenic idea. He labored to know the laws of heredity so that we might intelligently and systematically improve the inborn qualities of the race.

There are to be noted in Galton's work on eugenics two distinct aspects, just as in that of nearly all those who have followed him in this field. The one phase is the detached, objective investigation of the phenomena of human inheritance; the other is the propagation of eugenic ideas and commandments in the emotional and intellectual soil of the race. The former has its roots in pure intellect, the latter in emotion. In Galton's case these two phases were, on the whole, successive in time, with relatively little overlapping. This temporal disparateness has not always been so distinct in the efforts of some of his followers. To the first phase of Galton's work belong his great classics, "Hereditary

Genius" and "Natural Inheritance." The second phase had its climax in the formation of the Eugenics Education Society of England, now the Eugenics Society, which furnished the model for similar organizations all over the world.

The methodology of Galton's investigations of human inheritance was essentially and fundamentally statistical, and out of it grew the modern science of biometry. He handled two kinds of material, with a difference in method primarily growing out of the difference in the data. In such studies as "Hereditary Genius" he, in effect, counted the number of relatives, ancestral and collateral, of persons who were themselves in fact superior, or at least occupied in their time a distinguished position among their fellows. He believed that among such relatives those who were in fact superior or occupied a position of distinction in society were more numerous than was to be expected on the supposition that one person was as likely as another to be superior or distinguished, regardless of their ancestry. This conclusion has been generally accepted, on the basis of Galton's investigations, and those of many subsequent workers by the same method. But that there are serious difficulties and pitfalls inherent in this methodology has always been recognized by critical geneticists.

Galton's second category of material and method is exemplified in "Natural Inheritance." In that investigation certain physical characteristics of individuals, and their ancestral and collateral relatives, were objectively measured, with as great a degree of precision as was attainable in the circumstances. Then correlation tables were set up between different groups of kin—such as fathers and sons—and the correlation existing relative to the measurements taken was evaluated. These correlations were found to be generally positive, sensible in magnitude, and orderly in their relation to the closeness of the genetic kinship of the relatives involved. The results led to the formulation of what was called the Law of Ancestral Inheritance.

Substantially all of Galton's investigations on inheritance were made in complete ignorance of, because prior to, the two classical foundations of our present knowledge of genetics, the work of Mendel and Johannsen. The fundamental thing which these two investigators taught us, which altered completely not only the interpretation of the phenomena of heredity but also the methodology by which they can most successfully be studied, was that the bodily appearance or characteristics of an individual give no guarantee as to what the appearance or characteristics of his ancestors were, or what those of its descendants will be. A black hen mated to a white cock may have barred offspring. And both the black hen and the white cock may each have had barred parents. A large bean may throw uniformly smaller offspring than a small bean. As we now know, the relation between the bodily characters of parent and offspring depends, not upon what the bodily characters of the parents were, but instead upon their genetic constitutions—the genes which they carried in their germ cells.

But the theory which underlay the methodology of all Galton's investigations of human heredity, and the philosophy of his outlook and conclusions, was that the mechanism of heredity was such that children of superior men have "an enormously greater chance of turning out to be gifted in a high degree" than the children of ordinary men. This became the foundation of his eugenic teaching. If one could manage to select only superior human beings for breeding, "so a race of gifted men might be obtained," it was held. But Johannsen showed, with the utmost clarity, and a finality that has not been successfully challenged, that a race of superior beans was not to be bred that way. The only certain guarantee of the worth of a bean for the breeding of a superior race was not its own superiority, but the superiority of its progeny. Some superior beans gave superior progeny, but so also did some inferior beans. Precisely similar

results were obtained in a long-continued experiment at the Maine Agricultural Experiment Station in selecting hens for high egg production. For more than ten years only the highest layers were used as breeders. But a superior race was not produced. On the contrary the average production of the flocks steadily declined during the period. Taking the same stock at the end of this trial, however, and intelligently using the progeny test as the basis of perpetuation of breeding lines, it was possible to raise the level of flock production to a high position and hold it there. Some years ago I reviewed the literature regarding the actual mode of origination of the superior breeds of domestic animals and plants, and showed that there was no evidence whatever that these breeds had been produced by the method of gradually accumulating small superior bodily variations by continued selection.

There is no necessity for going further into the now ancient history of the selection problem. I wish merely to emphasize that the great founder of the science of eugenics as it exists today did his splendid pioneer work without the benefit of the exact knowledge of the mechanism of inheritance which has accumulated during the last quarter of a century.

II

Broadly speaking, the bulk of eugenic investigations of the present day proceed along the following lines. As extensive pedigrees as possible are collected for human beings, the *propositus* being usually selected because of some interesting characteristic which he bears, such as musical talent, or poverty, or hare-lip, or arthritis deformans, or a bald head. The data recorded in these pedigrees are then subjected to analysis according to one or the other of two methods, the one chosen depending upon the school of eugenics to which the investigator belongs.

One of these methods of analysis, the statistical or biometrical, seeks to measure

the correlations existing in the material between kin of different sorts and degrees, relative to the character under discussion. While enormously developed and refined in its technique, as compared with Galton's, the method differs in no way in principle from his. Its philosophy is precisely the same and has rested serenely unaffected by all the developments of exact genetic knowledge since the re-discovery of Mendel's laws.

The second method of analysis of human pedigrees in present eugenic vogue derives directly from Mendelism. In fact, it seeks to describe such pedigrees in terms of simple Mendelian ratios. In some cases it has been in the highest degree successful, in that it has demonstrated beyond reasonable doubt exactly what the mechanism of the inheritance of certain human characters is. A simple example of this must suffice here. The blue eye-color of human beings has been conclusively shown to be inherited as a simple recessive Mendelian character. Two really blue-eyed parents will have only blue-eyed children. Two non-blue-eyed parents will either have no blue-eyed children at all, in which case one or both of the parents are hereditarily pure for the absence of the genes which make eyes blue; or one out of every four of their children will be blue-eyed, while the other three are not. This latter distribution of eye color happens when both parents carry in their germ cells both the genes which make blue eyes, and the genes which make other colored eyes.

A number of other cases, nearly or quite as well established as this, might be cited. Altogether there is sufficient evidence to demonstrate the broad fact that in those characters of the human organism where the mechanism of inheritance happens to be simple enough to permit of conclusive elucidation by statistical methods alone, as contrasted with the experimental breeding tests which can be used with lower animals and plants, this mechanism is precisely the same in principle as that which obtains in other animals than man, and in

plants. In other words, all the most critical evidence indicates that man is not different from other forms of life in respect of the mechanism by which his characters are inherited.

If those characters of human beings which are capable of precise genetic analysis are found to follow a simple Mendelian course, when studied by the relatively unsuitable method at our disposal in the case, it is a reasonable inference that the genetically more complex characters behave in an equally lawful manner, which is merely too involved for non-experimental methods of analysis. But critical caution needs always to be exercised here. Eugenics has fallen in some degree into disrepute in recent years because of the ill-advised zeal with which some of its more ardent devotees have assigned such complex and heterogeneous phenomena as poverty, insanity, crime, prostitution, cancer, etc., to the operation of either single genes, or to other simple and utterly hypothetical Mendelian mechanisms. But discounting all such stupidity, because in the long run it is certain to have only its just effect upon the progress of human biology, the solid achievements of critically scientific eugenics up to the present time are unquestionably considerable. The chief criticism which can fairly be made of really scientific eugenics is that what is too often overlooked is the enormous difficulty of working out the particular genetic mechanism of any character in an organism which cannot be experimentally bred in the ways necessary to establish conclusively the real situation.

III

The propaganda phase has always gone along hand in hand with the purely scientific, from the very beginning of the development of eugenics. And in recent years the two phases have largely lost their original disparateness and have become almost inextricably confused, so that the literature of eugenics has largely become

a mingled mess of ill-grounded and uncritical sociology, economics, anthropology, and politics, full of emotional appeals to class and race prejudices, solemnly put forth as science, and unfortunately accepted as such by the general public.

No scientific man ever likes to admit that he is engaged in enterprises which savor in the smallest degree of propaganda. When he is so occupied he customarily sets up a defense mechanism, and calls his labors education, promoting the public welfare, or by some other such noble cognomen. This soothes his own qualms and may fool other people, especially if they are not very penetrating. Propaganda is, however, a subtle and insidious reptile. Its chief characteristics are two in number. The first is that its objective is always "to promote the interests of those who contrive it, rather than to benefit those to whom it is addressed." Those who engage in it "may genuinely believe that success will be an advantage to those whom they address, but the stimulus to their action is their own cause."

The second characteristic of propaganda that marks its indifference to the truth. "Truth is valuable only so far as it is effective. The whole truth would generally be superfluous and almost always misleading." These quotations are from what is probably the most candid, cold-blooded, and penetrating analysis of propaganda ever made, contained in the article by the distinguished English zoölogist, Dr. P. Chalmers Mitchell, on the subject, in Vol. 32 of the twelfth edition of the *Encyclopedia Britannica*.

The concern of the scientific geneticist in eugenics propaganda arises from the fact that it is carried out *in his name*. The public is told that the eugenic *pabulum* it is fed is the last and considered word from the science of genetics. Let us see.

Without going into details, a rather extensive acquaintance with the literature of eugenics leads to the conclusion that the following are the chief doctrines that are being publicly propagated:

1. That all important characters of human beings, physical, mental, and moral, are to such an overwhelming degree determined by heredity—in the sense that those characters will be similar in the offspring to what they were in the parents—that any other factors which may be involved in their determination are relatively unimportant from a racial point of view.

2. That since superior people will thus necessarily have, in the main, superior children, and inferior or defective people will necessarily have inferior or defective children, in the main, the welfare of the race demands that every possible means should be taken to encourage superior people to have large families, and to force inferior people to have small families, or even better none at all.

3. That some races of people are superior to other races, and that intermixture or even contact of the superior with the inferior should be prevented by exclusive immigration laws.

As an explanatory corollary to these theses it should be said that by superior people, whether individuals, classes, or races, seems always to be meant either:

- a. "My kind of people," or,
- b. "People whom I happen to like."

Thus we are told that college and university graduates, and particularly professors, are genetically superior people, taken as a class, as are also the economically well-to-do. The Italians are proud of themselves, of their history, and of their ancestry, noble in its achievements; but the now existing immigration law of the United States attests that they are an undesirable, and therefore by implication, inferior race.

In this connection one is reminded of the correspondence between Galton and Darwin in 1872 and 1873. Galton had conceived the idea of an Eugenic Register, in which superior people were to be listed, as a sort of genetic aristocracy, and wrote to Darwin to ask him what he thought of the scheme. Darwin was politely lukewarm about it, and said in the course of his reply: "But the greatest difficulty, I think, would be in deciding who deserved to be on the register. How few are above mediocrity in health, strength, morals and intellect; and how difficult to judge on these latter heads!" This somehow brings to mind, when considered in connection with the

feverish and frequently successful efforts of brash eugenists to influence legislation, that ancient jest which tells of the timorousness of angels about where they shall tread.

Leaving aside all discussion of what might perhaps be called the broad humanitarian aspects of these eugenic theses, I wish to submit that they are all based upon, and derive their entire meaning from what is now known to be a profound fallacy. This fallacy is that the essence of heredity is comprehended in the statement that like produces like. The epoch-making achievement of genetics during the last quarter of a century is the complete, comprehensive, and general demonstration that heredity does *not* mean that like produces like. Has the superlatively important lesson which Johannsen's beans taught the world been so soon forgotten? Or have the eugenists never heard of it? Apparently not. For their public teaching, their legislative enactments, and their moral fervor are plainly based chiefly upon a pre-Mendelian genetics, as outworn and useless as the rind of yesterday's melon. With a curious lack of even literary consistency they always begin their books with an explanation of the principles of Mendelian inheritance, and then in succeeding chapters preach social and biological doctrines which not only have no relation to the operation of these principles in the reproduction of *Homo sapiens*, but which also in many cases could not possibly be true if these principles did operate.

I know of no one better qualified at this moment to speak about the science of genetics in relation to human affairs than Professor Thomas Hunt Morgan. This is what he has to say ("Evolution and Genetics," 1925, pp. 206-207):

I am inclined to think that there are considerable individual differences in man that are probably strictly genetic, even though I insist that at present there is for this no real scientific evidence of the kind that we are familiar with in other animals and in plants. I will even venture to go so far as to suppose that the average of the human race might be improved by eliminating a few of the extreme disorders, however they may have

arisen. In fact, this is attempted at present on a somewhat extensive scale by the segregation into asylums of the insane and feeble-minded. I should hesitate to recommend the incarceration of all their relatives if the character is suspected of being recessive, or of their children if a dominant. After all, these segregations are based not on humanitarian principles, or for our protection rather than for genetic reasons. How long and how extensively this casual isolation of adults would have to go on to produce any considerable decrease in defectives, no informed person would, I should think, be willing to state.

Least of all should we feel any assurance in deciding genetic superiority or inferiority as applied to whole races, by which is meant not races in a biological sense but social or political groups bound together by physical conditions, by religious sentiments, or by political organizations. The latter have their roots in the past and are acquired by each new generation as a result of imitation and training. If it is unjust "to condemn a whole *people*," meaning thereby a political group, how much more hazardous is it, as some sensational writers have not hesitated to do, to pass judgment as to the relative genetic inferiority or superiority of different *races*.

If within each human social group the geneticist finds it impossible to discover, with any reasonable certainty, the genetic basis of behavior, the problems must seem extraordinarily difficult when groups are contrasted with each other where the differences are obviously connected not only with material advantages and disadvantages resulting from location, climate, soil, and mineral wealth, but with traditions, customs, religions, taboos, conventions, and prejudices. A little goodwill might seem more fitting in treating these complicated questions than the attitude adopted by some of the modern race-propagandists.

IV

The broad meaning of the principles of Mendelism, as applied to an organism like man, necessarily reproducing bisexually and always heterozygous relative to a large number of his inherited characteristics, is that an enormously wide variety of new and different combinations of qualities is always possible, and may be expected to appear in some degree in virtually every mating. Some of these combinations may be good and some may be bad; some may be of such sort that they have their expression greatly influenced by the environmental circumstances under which their development takes place, while others will be capable of but slight modification by any environmental influences consistent with the continued life of the individual.

In such a genetic situation it is clear that any attempt to predict what the bodily characteristics of the human offspring will be from an examination, however careful, of the bodily characteristics of the parents, or those of the ancestry generally, is doomed to even worse failure than it meets in the simpler cases presented by lower forms, such as fowls or beans. That this is the meaning of modern genetics in the breeding of mankind, has been most lucidly explained to the general reader (and to the eugenicist) by Professor H. S. Jennings in his latest book, "Prometheus," published lately in the "Today and Tomorrow" series.

Under these circumstances it is plainly desirable to reexamine the old eugenic questions and the data on which they are based, to see how they stand interpretation by the established principles of modern genetics, in place of a piece of outworn folklore that never was true.

To "breed better men" is the slogan of positive eugenics. And it is a good one. Mankind always has and always will have need for superior men to be discoverers and leaders. The practical question is: How are such men to be produced? The answer of current orthodox eugenics is: By getting the existing superior people to breed more and the inferior people to breed less, on the ground that superior persons will have superior offspring. But, as we have seen, the exact science of genetics does not support this doctrine. We must then examine the question *de novo*. There is, unfortunately, but one way by which such an investigation may be made, if the inquiry is to be strictly specific to man. This method involves the doing of two things. The first is to find out what kind of people have, in the past history of the world, produced superior offspring. The second is to find out the extent to which persons of universally recognized and admitted superiority had superior children.

In preface to the account of my own investigations I wish to emphasize that there is a difference of great biological as well as

social importance between human superiority and human distinction. Of the distinguished men living today, and at any time in the past, some are superior and some are not. Those who are not owe their distinction to the position which they happen for a time to occupy in the human social organization. It would be improper to mention the names of living persons by way of illustration. But it is not necessary. I only ask that one think over the persons who happen at this moment to occupy the positions of the highest distinction and power in the conduct of human affairs and decide how many of them are persons of innate superiority, and how many owe their position either to a political or some other accident, or to the power of intrigue or money, or to the fact that the position they hold is itself inheritable, in the sense that it may be and often is passed on to members of the family or to friends. Suppose that we had show-rings for human beings as we do for cattle, and adequate methods of judging human qualities. How many of the persons of the greatest public *distinction* today would carry away blue ribbons for personal *superiority* in either physical, mental, moral, or æsthetic qualities, in free and open competition?

This consideration means that in investigating the breeding of superior men we must classify our material in such a way as to keep as clearly marked as possible the difference between superiority and distinction.

Another point of great importance in any such investigation is to have objective rather than subjective criteria, so far as possible, for both distinction and superiority. The old war-cry, "like produces like," is responsible for a dreadful lot of unconscious bias in such matters. Nearly everybody feels emotionally that a great man ought to have had personally distinguished or superior parents. So nearly all biographers, whether of the auto- or hetero- variety, do their best to show that this was so. If an observable tendency in Shakespearean commentary in England

continues at its present pace much longer, I judge it will ultimately appear that Shakespeare's father was an even greater man than *he* was! As a matter of fact the father was the greengrocer and butcher of the town, doubtless an amiable and useful citizen, but after all probably not greatly different from greengrocers and butchers in general. Whereas Shakespeare himself was really a quite superior man in his chosen line of endeavor.

V

During the past year, at a considerable cost of time and labor, I have made out a card for every person to whose biography one whole page or more of space is given in the current edition of the Encyclopedia Britannica. The criterion of one whole page of space, as a minimum requirement for inclusion in the list, makes a severe selection. It includes, with a few exceptions, only the *most* distinguished persons of whom there is historical record, and it includes substantially all of these. The criterion of selection is so high that in most fields of human endeavor the effect of the national origin of the source used is annulled. Only persons of world-wide distinction get a whole page or more of space.

We thus start with a list of the most eminent persons of whom there is record. We then ask whether their parents or their children were of sufficient distinction to get a biographical notice of any length whatever in the Encyclopedia Britannica. This is a strictly objective criterion. If a man's father has a separate biographical notice the man may rightly be said to have had at least one distinguished parent. And it must not be supposed that the parental criterion is too severe. The Encyclopedia Britannica contains well over 25,000 biographical notices of one sort or another, according to my estimate. Many of the short notices pertain to persons whose claim to distinction was certainly not great—in fact, often very slight indeed. But I have not stopped here. Instead, care-

ful search has been made through the biographies of the distinguished men themselves, and if any statement could anywhere be found indicating that either the parents or the children of these men were in any particular noted or superior, beyond the one respect of being kin to a great man, this evidence has been set down to the credit of the relative.

After being filled out the cards were classified into three main groups, as follows, for reasons which will be apparent:

1. *Rulers*, including monarchs, presidents, popes, etc., being persons whose distinction in every case derived in some part from the position held, and in many cases entirely so.
2. *Statesmen*, including politicians, diplomats, reformers, etc., being persons whose distinction also in some degree, but perhaps on the average a smaller one, rested upon their position and the circumstances of their times.
3. *Others*, being persons whose distinction in the main derived solely from their own personal superiority.

The total number of persons passing the high criterion of distinction was 1011. Of these 588 fell in the third class, in which the individual's distinction rests almost wholly upon his own personal superiority, in one direction or another. No accident of position or political influence can make anybody one of the 66 greatest artists the world has known, for example, nor can such things make one a great poet or philosopher.

Within the limits of this article it is possible to discuss only the merest fraction of the data. But the results of the whole investigation will presently be separately published in full detail. Here only two groups will be discussed, the philosophers and the poets. These groups are chosen because there can be no question, I think, about their distinction resting almost wholly upon their sheer superiority over their fellow men.

There are 63 philosophers who pass our criterion of great eminence. The average amount of space devoted to each of them in the Encyclopedia Britannica is 1350.2 mm. (The measurements were all made from the Handy Volume Edition.) This

average is nearly four full pages. It impressively testifies to the fact that these were indeed eminent philosophers.

Regarding their parents the facts are as follows: Those of 15 are either wholly unknown or are unmentioned. This fact indicates that they were certainly not persons of distinction. There are left 48 great philosophers about whose parents there are definite records. What their fathers were is shown in the following tabulation:

Petty political office-holders	6
Higher political office-holders	5
Merchants and shopkeepers	4
Lawyers	4
Clergymen of small parishes	4
College or university professors	4
Physicians	3
Watchmakers (one of whom was "dissipated, violent-tempered and foolish")	2
Weavers	2
Farmers or peasants	2
Of titled family	2
Soldier, "citizen of London," saddler, "illiterate and criminal," manufacturer, clerk, shoemaker, fisherman, historian, schoolmaster (each)	1
Total	48

Of these 48 fathers, just two were sufficiently distinguished to leave public record of that fact. One mother was enough of a personage to leave a record for posterity. The average space devoted to these three parents in the Britannica is 185.3 mm.

Taking the list of fathers as a whole, it is perhaps as fair a cross-section of men in general as one could expect to attain in a sample of 48. It is mainly composed of mediocre people, with a few superior persons in the lot, and a few badly inferior. But to try to make a case from this list, that 48 out of the 63 most eminent philosophers that the world has ever known were engendered by superior persons, would be arrant nonsense. Some of these parents would have been segregated or sterilized if the recommendations of present day eugenical zealots had been in operation. And I estimate that a good half of these fathers would have been urged to curb their reproductive rate in the interest of the "race." As a matter of fact, the particular combinations of genes which made

these greatest philosophers were derived from just an average lot of human beings. And this is precisely what would be expected if the established principles of Mendelian inheritance are correctly applied to human reproduction, on the basis of all that we now know.

Let us turn next to the children of these 63 most eminent philosophers. No one can deny that these men were themselves superior persons. Beside their philosophical teachings, they ought, on current eugenic doctrine, to have done a lot for the world by leaving behind superior progeny. What are the facts?

Thirty-six of these 63 men either are certainly known never to have married or had children, or there is no record that they ever did either. In either case it is certain that they left no distinguished progeny. Nine married but had no children. This is a ghastly record, which will bring sorrow to the heart of every upstanding eugenicist. But there may still be hope. Perhaps the 18 who are recorded as having some children produced such a scintillating lot of offspring as to make up for the lack of either public spirit or potency on the part of their colleagues. Alas, the case goes not so. Two of the 18 had illegitimate children only, and no good came of them. Eleven of the remaining 16 produced children of no distinction or superiority whatsoever. Indeed some of them are specifically described as "dull and fatuous." Five only out of the world's 63 greatest philosophers produced children who were either gifted or distinguished or both. Three of the 5 had children of sufficient distinction to get separate notice in the Encyclopedia Britannica.

Let us turn now to the poets. There are 85 in the list, one of whom is a woman, Elizabeth Barrett Browning. They receive an average of 1097.6 mm. of space. The fathers of 13 are either wholly unknown or there is no record of them. In either case they certainly cannot have been distinguished persons. The remaining fathers were as follows:

Of titled family	12
Merchants, tradesmen, or shopkeepers . . .	11
Farmers or peasants	8
Clergymen of small parishes	7
Wealthy, but otherwise undistinguished . .	6
Lawyers	4
Country squires	3
Clerks	3
Petty political office-holders	3
Poets	2
Higher political office-holders	2
Military commander, inn-keeper, "libertine," musician, priest of idol, money-lender, hostler, broker, university professor, army surgeon, weaver . . (each)	1
Total	72

Of these 72 fathers, there were three only who achieved sufficient distinction to get separate mention in the Encyclopedia Britannica. The average length of the articles devoted to them is 159.3 mm. Broadly speaking, the case for the parentage of poets is like that for philosophers. These fathers were most certainly not a homogeneous lot of superior, "eugenically desirable" people, as the doctrine of the propagandists would have it.

The chief differences between the poets and the philosophers in respect of parentage seems to be that there was somewhat more wealth back of the poets, and that more of them came from titled families. Just such differences might perhaps have been expected. They suggest the possibility that certain kinds of favorable environmental influences may help in the production of great poets.

The case regarding the production of eminent *children* by the greatest of the world's poets is so nearly like that already discussed for the philosophers that I shall not take the time to detail it.

VI

Altogether one concludes that the remark of a wise and witty French woman, made in another connection, has a certain appositeness in the present one: "*La paternité est et ne saurait jamais être qu'un acte de confiance.*"

While space is lacking for further exposition of my results here, it may be said

that, in general, they are *objectively* much the same as Galton's. The difference is chiefly in the interpretation. He found in his investigation of English judges ("Hereditary Genius," 2nd edit., p. 55), that each 100 eminent judges had only 9.1 fathers of any degree of eminence whatever, and his criterion of eminence among the kinsfolk of great men was objectively a rather low one. This means that 90 of each 100 of these highly eminent judges were produced by entirely mediocre people. In other words, *nine times* as many distinguished men were produced by mediocre people as were produced by eminent people, on a low criterion of parental eminence. Contrast such a result as this with the operations of a modern plant-breeder, who produces stable superior races by the application of established genetic principles!

Furthermore, Galton found that each 100 eminent judges produced only 12.6 sons of any degree of eminence whatever. Making due allowance for the more objective and somewhat higher criterion of eminence in the kinsfolk which has been used in the present investigation, its objective results are in good accord with Galton's. But what a ridiculous basis do such results furnish for the eugenic dogma that only superior people should be encouraged to breed freely!

To summarize: The status of eugenics at the moment is that critical studies of human inheritance have, in the first place, firmly established the fact that certain

human characteristics are inherited strictly in accordance with those genetical laws which have been found to govern inheritance in lower animals and in plants; and, in the second place, have made it probable that other and more complex human characters also follow established genetic principles. On the basis of what is now known of genetics, both for human beings and other forms of life, it is to be expected that a wide variety of new and different combinations of genes may occur in virtually every mating of human beings, some of which combinations may be good, some bad, and some indifferent. Certainly modern genetics gives no support to the view that the somatic characteristics of the offspring can be predicted from a knowledge of the somatic characters of the parents. In preaching as they do, that like produces like, and that therefore superior people will have superior children, and inferior people inferior children, the orthodox eugenists are going contrary to the best established facts of genetical science, and are, in the long run, doing their cause harm.

A new *ad hoc* investigation of the breeding of great men shows that the facts are in full accord with the expectation from established genetic principles, and not at all in agreement with current eugenic dogma. It would seem to be high time that eugenics cleaned house, and threw away the old-fashioned rubbish which has accumulated in the attic.